REMARKS

Upon entry of the present amendment, claims 1, 4, 5, 6, 9, 10, 11, 13, 17, 18, and 20 will have been amended. In view of the herein contained amendments and remarks, Applicants respectfully requests reconsideration and withdrawal of the outstanding rejection together with an indication of the allowability of all the claims pending in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

Applicants note with appreciation the Examiner's indication that claims 4 and 9 would be allowable if rewritten in independent form.

In the outstanding Official Action, the Examiner rejected claims 1, 3, 5-6, 8 and 10-20 under 35 U.S.C. § 103(a) as being unpatentable over MINDE et al. (U.S. Patent No. 5,991,717) in view of OZAWA (U.S. Patent No. 5,963,896). Applicants respectfully traverse the above rejection and submit that it is inappropriate in view of the herein contained remarks.

One aspect of the present invention, as disclosed is directed to speech coding using a stochastic codebook (54) having a gain feature. The stochastic codebook includes a first subcodebook (61a, 62a), in which excitation vectors composed of a small number of pulses are stored, and a second subcodebook (61a, 62b), in which excitation vectors composed of a large number of pulses are stored, and a gain calculating section (63). The gain calculating section controls a gain for respective excitation vectors in the first subcodebook (61a, 62a) and the second

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subcodebook (61b, 62b) according to distance between pulses of the excitation vectors in the first subcodebook (61a, 62a). Features related to this aspect of the present invention are recited by independent claims 1, 6, 11, 13, and 17.

A different aspect of the present disclosed invention is directed to speech coding using a stochastic codebook (54) with a selecting feature. This particular stochastic codebook, shown in detail in figure 9, includes a first subcodebook (91a, 92a), in which excitation vectors composed of a small number of pulses are stored, and a second subcodebook (91a, 92b), in which excitation vectors composed of a large number of pulses are stored, and an excitation switching instruction section (93). The excitation switching instruction section selects one of the first subcodebook (91a, 92a) and the second subcodebook (91a, 92b) corresponding to distance between pulses of the excitation vectors in the first subcodebook (91a, 92a). Features related to this aspect of the present invention are recited by independent claims 5, 10, 15, 18, and 20.

The Examiner in the outstanding Office Action, asserts that MINDE et al. teach obtaining gain information for synthesized speech using a relation of said synthesized speech and said input speech signal. However, Applicants respectfully submit that the gain taught in MINDE et al. is entirely different from the gain of the present invention. The gain of the present invention operates in conjunction with the excitation vectors in the subcodebooks.

In particular, MINDE relates to a speech coding device using a gain g_m and g_t and that this gain is not related to the distance between the pulses of the

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excitation vectors. MINDE discloses a Multi-pulse excitation (MPE) generator 34 and Transformed Binary Pulse Excitation (TBPE) generator 36 instead of the claimed stochastic codebooks. That is, MINDE et al. does not disclose or suggest the use of two subcodebooks, namely a first subcodebook storing excitation vectors with a small number of pulses and a second subcodebook storing excitation vectors with a large number of pulses, a controller that controls a gain for respective excitation vectors in at least one of the first subcodebook and the second subcodebook corresponding to a distance between pulses of excitation vectors in the first subcodebook as recited in the combination of claims 1, 6, 11, 13, and 17. Similarly, OZAWA does not disclose or suggest this above-noted feature of the present invention, in the claimed combination.

The Examiner asserts that OZAWA discloses that the positions of the amplitude pulses are retrieved with a different gain for each group of pulses less in number than the total number of pulses M. However, in contrast to the present invention, the portion of OZAWA that discloses the above feature relates to a method of pulse amplitude quantization after multipulse positions are determined. This method achieves pulse amplitude quantization using an amplitude codebook as explicitly set forth at column 19, lines 32-36.

In this regard, the gain for the excitation vectors according to the present invention, and the gain for amplitude according to OZAWA are entirely different. The present claimed invention is not directed to an amplitude codebook, in direct contrast to OZAWA. Nor does the present invention relate to controlling the

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amplitude of each pulse separately. Thus, OZAWA and the present invention, as recited by the claims, are clearly distinct from each other.

The present invention is directed to controlling the gain based on a distance between the pulses of excitations vectors in a subcodebook. Neither OZAWA nor MINDE et al. disclose this claimed feature.

OZAWA only teaches making a voiced/unvoiced judgment and switching gain codebooks with reference to mode data. By contrast, the present invention involves, inter alia, discloses selecting the subcodebooks according to the distance between the pulses of the excitation vectors in the first codebook with a small number of pulses as recited by claims 5, 10, 15, 18, and 20. Even if the present invention were to make use of voiced/unvoiced judgment result (taught by OZAWA) in conjunction with the above-noted feature, OZAWA and the present invention would still remain fundamentally different.

That is, the present invention is directed to switching the subcodebooks based on a "distance" between the pulses of the excitation vectors. By contrast, OZAWA only discloses analyzing the pitch gain of a perceptual-weighted input signal and switch modes. Moreover, neither OZAWA nor MINDE et al. discloses or suggests switching subcodebooks based on a distance between pulses of excitation vectors.

With respect to the Examiner's rejection of dependent claim 3, 8, 12, 14, 16, and 19 under 35 U.S.C. § 103(a), Applicants submit that these claims are dependent from one of independent claims 1, 5, 6, 10, 11, 13, 15, 17, 18, and 20,

which are allowable, as discussed supra. Further, Applicants submit that claims 3, 8, 12, 14, 16, and 19 recite additional features that further define the present invention over the prior art.

Additionally, minor amendments have been made to claims 1, 4, 5, 6, 9, 10, 11, 13, 17, 18, and 20 in order to make the language of these claims more consistent. In these amendments, Applicants have made several additional changes to the language of the claims to render the same more self consistent, as well as more fully in compliance with U.S. syntax, idiom and grammar. These amendments do not change the scope of the claims but are merely cosmetic changes that give rise to no file wrapper estoppel.

In view of the fact that none of the art of record, whether considered alone or in any proper combination, discloses or suggests the present invention as defined by the pending claims, and in further view of the above remarks, reconsideration of the Examiner's action and allowance of the present application are respectfully requested and are believed to be appropriate.
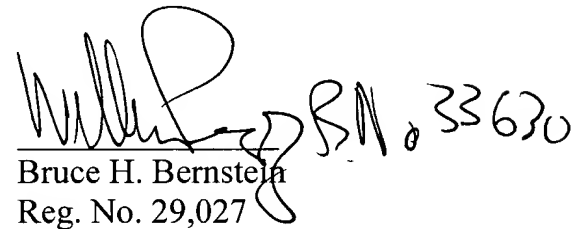
SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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